

Competitive pricing procedures for land transport projects

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Abstract:

The Transit New Zealand Act (1989) requires that from 1 July 1991 all road construction, maintenance, planning, design and supervision projects and public transport subsidies are to be awarded by a competitive pricing procedure. The Act also states that projects may not be undertaken directly by central or local government departments. This will result in a major change to the way in which most types of land transport projects in New Zealand are carried out.

Transit New Zealand is required to define the competitive pricing procedures that will apply for the different types of projects. A substantial study was conducted to establish and document these procedures during the first half of 1990. This paper details the competitive pricing procedures that have been adopted by Transit New Zealand as a result of the study, and discusses issues that were considered in developing these procedures.

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Introduction

The situation prior to 1989

Until recently there was no formal co-ordination of the planning and administration of land transport in New Zealand. Accountability for the results of expenditure by the various organisations involved was also weak. The National Roads Board planned and administered the maintenance and improvement of state highways, and allocated subsidies to territorial authorities for maintenance and improvement of local roads. The state highway system is a network of strategic routes throughout New Zealand totalling 11,000km. Local roads total about 90,000km. Funding for the National Roads Board comprised a portion of the excise levy on petrol and all of the road user charges collected from heavy vehicle operators. The National Roads Board had no permanent staff. It was serviced by officers of the Roothing Directorate of the Ministry of Works and Development (MWD). Other divisions of the MWD carried out the actual work of maintenance of state highways and the design and supervision of improvements to state highways under instruction from the Roothing Directorate. Only improvement works and some major maintenance projects were subjected to competitive tender. All professional services were carried out by divisions of the MWD.

Funding for local roads came from territorial authority rates and the National Roads Board subsidy in approximately equal proportions. Territorial authorities planned and managed the local roads in their area. Most of them had design and supervision staff and maintenance workforces and work on local roads was generally carried out by this resource. A few smaller authorities did make considerable use of engineering consultants and maintenance contractors.

Central government subsidy for public passenger transport was administered by the Urban Transport Council. This was serviced by a small unit attached to the Ministry of Transport. The Urban Transport Council provided approximately half of the subsidy for most urban public passenger transport operations in New Zealand with regional and local government making up the rest from local authority rates. Services were generally operated by divisions of the local authorities although some were undertaken by licensed private operators.

The final organisation involved was the Land Transport Division of the Ministry of Transport which has responsibility for road safety. This includes setting standards for drivers and vehicles, carrying out education and enforcement of the traffic regulations and investigation of accidents.

The corporatisation process

In 1985 the Government made a number of decisions that were to lead to significant changes in the way most central and local government functions were carried out. These were as follows:

- To achieve greater accountability departments and local authorities would be required to publish statements of intent containing objectives against which their performance could subsequently be measured
- Policy and commercial functions should not be carried out by the same organisation.
- Organisations providing commercial services should not receive Government funds unless the amount of such payments has been determined in competition with other commercial organisations.

A result of this was that the MWD was separated into policy and commercial divisions. In 1988 the commercial division became a stand-alone company known as Works Corporation. The policy division was disbanded and its functions dispersed to other government departments. The roading directorate which serviced the National Roads Board was transferred to the Ministry of Transport. The National Roads Board signed agreements with Works Corporation for the corporation to provide all its professional services needs and to undertake all the maintenance of state highways previously undertaken by MWD.

At the same time territorial authorities were served notice that they too would be required to corporatise their commercial activities if they wished to continue receiving central government subsidy.

The Transport Law Reform Bill

New land transport legislation which had been planned since 1986 was introduced in the Transport Law Reform Bill in May 1989. This called for the establishment of a new organisation to be known as Transit New Zealand which would carry out the combined functions of the National Roads Board and the Urban Transport Council under new increased accountability requirements. Increased responsibility for land transport planning was placed on regional councils and a requirement for more formal consultation between the different organisations involved was proposed to ensure that projects by one agency were not duplicating, or acting counter to, the objective of projects being undertaken by the other organisations involved.

The Bill introduced a requirement that no funds could be paid out by Transit New Zealand for any project of planning, design, supervision, construction or maintenance or for any public passenger transport project, unless the work was awarded by tender to the bidder submitting the lowest price. This provision provoked many submissions to the Parliamentary Select Committee that considered the Bill, causing it to recommend a revision of the clause.

The Transit New Zealand Act (1989)

The select committee reported back to Parliament with a completely revised version of the service procurement clause and the revised requirement was incorporated in the Transit New Zealand Act (1989) which took effect on 1 October 1989. The new

requirement gave flexibility for other important aspects of contract proposals such as quality, attention to safety issues and minimisation of long term land transport costs to be considered in addition to the contract bid price. This recognised that saving money on a project design for instance, could be false economy if the project that resulted from that design had higher construction and maintenance costs than might have been the case if a more expensive design bid had been chosen from a firm with greater expertise in that type of project.

Section 20 of the Transit New Zealand Act stipulates that after 30 June 1991 no payment shall be made by Transit New Zealand (from the Land Transport Account) unless the payment relates to an approved project, the price of which has been determined by a competitive pricing procedure. The same section of the Act also states that no such payment can be made to local authorities. However local authority trading enterprises (LATEs) which meet the requirements set out in the Act may compete for Transit New Zealand funded projects. Some types of project such as administration, standard fare and reduced fare systems in relation to a passenger service and temporary repair of damage caused by unexpected events such as floods are exempt from the requirements of section 20, described above. The Act leaves the definition of administration up to Transit New Zealand.

The Act requires Transit New Zealand to approve competitive pricing procedures suitable for the different types of projects. Section 19 of the Act states that for the purposes of Section 20 Transit New Zealand shall approve from time to time a competitive pricing procedure for each project or class of project. In approving a competitive pricing procedure, the authority may specify particular terms and conditions to be either included in or excluded from any contract formed pursuant to that procedure. In addition, the Act states that in exercising its power to stipulate the form of the competitive pricing procedure for various types of project the Authority shall have regard to :

- The efficient application of Transit New Zealand funds
- The safety and other interests of the public
- The desirability of encouraging competition in the relevant industry
- The undesirability of excluding any competent organisation from competing
- The costs of administering contracts

Transit New Zealand was aware that the roading and public passenger transport industries would be unable to plan effectively for the competitive environment facing them on 1 July 1991 until they knew the form of competitive pricing procedures that were going to apply. Many territorial authorities were unsure whether they should establish LATEs or just plan to wind down their operations prior to 1 July 1991 and award all work to private contractors. There was obviously a need for Transit New Zealand to define the competitive pricing procedures that would apply as soon as possible.

Research programme for development of the competitive pricing procedures

In November 1989 Transit New Zealand decided that due to all the other calls on staff time during its establishment phase, consultants would need to be used for some of the development work. Interested organisations were invited to register their interest in being considered for assignments. Briefs were written for three separate projects; EC10 Competitive pricing procedures for road projects, EC11 The area, scope and duration for state highway contracts, and EC12 Competitive pricing procedures for public passenger transport projects. Project EC10 was awarded to management consultants KPMG Peat Marwick in association with Works Corporation. Work began in February 1990 and was completed by June 1990. Project EC11 was carried out concurrently by Transit New Zealand staff. Proposals were obtained from consultants for this project but were considered too expensive for the work involved. The results of these two projects are incorporated in the Transit New Zealand Manual of Competitive Pricing Procedures for Road Projects which was approved by Transit New Zealand's Board in June 1990.

Project EC12 covering passenger transport projects was awarded to Travers Morgan (NZ) Ltd in association with Wendell Cox Consultancy. Work began in April and is due for completion by July 1990, although the Transit New Zealand Board has received an interim report and given approval in principle to the procedures that it recommends. The final results will be covered in a separate volume of the competitive pricing procedure manual.

The following sections detail the competitive pricing procedures that have been adopted by Transit New Zealand and discuss issues that were considered in developing these procedures.

Theoretical considerations relating to the tendering process for road projects

Efficient tendering procedures are considered to have five main components as listed and discussed below. The components are fairly general and most of them are equally applicable to public passenger transport projects.

The specification

Firstly it is necessary for the client to specify the scope of the work and any lower bound that it wants to impose on the quality. This is best done by a results specification in which the end product or ultimately the end result is specified and it is up to the bidder to develop an acceptable method for achieving that result. Although end result or performance specifications are most efficient, in practice they are difficult to write. The

difficulty is in defining the output, at the time that bids are being invited, in a way that can be precisely measured later on. Sometimes this is because the output is not known until the project is well underway such as occurs with investigation projects. At other times it is because in many cases there are currently no reliable methods for testing the quality and long term durability of a project result immediately on completion. This is likely to always be a problem but research and advances in technology should enable some advances to be made.

Invitation to bid

From a theoretical efficiency point of view it is desirable to maximise the number of competent bidders in order to get the widest range of ideas and methods suggested. One of the practical constraints on this is that bidders undertake an expected payoff evaluation before deciding to invest in the preparation of a bid. They will tailor the depth of the proposal and the fine-ness of their price to their assessment of their likelihood of winning. Also administrative costs for both client and bidders increase as the number of bidders rises. Where there are known to be a number of competent bidders it is likely to be more efficient to go through a two stage process in which bidders firstly just outline their competence and experience and then a short-list of three to five is invited to prepare and submit full detailed proposals.

Consideration needs to be given to the best means for acquainting potential bidders with the contract opportunities. Possible acceptable means are maintaining of a register of firms interested in bidding, or advertising all opportunities in widely circulated newspapers

Price Model

The possible price models identified were lump sum, cost plus, schedule of rates, fee curve and negotiated prices. Each of these price models has different features which make them more suitable from some points of view and less from others. The points of view considered are incentives, competition, risk, administration and response time.

Lump sum: The lump sum approach requires the bidder to submit a fixed price to perform the specified work. It is the most powerful competitive model available because the whole cost of the project is subject to competitive pressure. All aspects of the work that affect cost, such as methodology, selection of inputs, management and profits, will be scrutinised to select the most efficient approach, thereby permitting the bidder to offer the lowest possible price. The lump sum approach is also relatively simple to administer, and it encourages innovation, particularly in the development of more cost efficient technologies for supplying client needs. A drawback of lump sum bidding is that it gives suppliers an incentive to cut quality, in order to reduce costs, so it is important for the client to monitor and control quality of the output to ensure that target standards are achieved. A second disadvantage is that it places all risk on the supplier. If bidders do

not believe they will be able to secure a sufficient number of contracts to be able to average out their risk, they will build a risk premium into the lump sum price they offer to perform the work. Roading authorities may be in a better position to carry risk because they are involved in a large number of contracts and so will be able to offset risks across many projects. Use of the lump sum pricing model, where the bidder carries the risk, is generally inefficient for risky work.

Schedule of rates: Under a schedule of rates approach bidders are required to submit rates for units of inputs or units of intermediate outputs that together will produce the required result. The tendered rates will include both a unit cost and a profit component. The schedule of rates model enables competitive pressures to be brought to bear on the unit rates but not on the quantities. This makes it less effective than the lump sum price model in bringing competitive pressure to bear on the total project cost. Under a schedule of rates model the risk of variation in input costs is borne by the supplier but the risk of variation in quantities is borne by the client. This gives the supplier an incentive to use more quantities wherever possible in order to increase his revenue and profit, so it imposes a greater monitoring and management cost on the client. The schedule of rates model has advantages in situations involving risk because it enables roading authorities to carry a share of the risk, which can lead to lower average costs as explained earlier.

Cost plus: The cost plus approach goes further still and transfers virtually all risk to the client. All costs incurred by the supplier are passed on to the client. The client also carries quantity risks. Only the supplier's profit margin or on-cost is subjected to competitive pressure and this is a small fraction of the total cost. As competition is not focussed on costs this approach does not provide bidders with adequate incentive to establish low cost sources of inputs or to develop new technologies that offer improved efficiencies. In fact suppliers have an incentive to find high cost sources of inputs as this maximises the value of their on-cost. The cost plus model is inferior to the lump sum model for well defined work and the schedule of rates model for risky work. It is not considered suitable for the competitive pricing procedures.

Fee curve: Under this model the fee is a function of the cost of the associated project, which is almost always a physical works project. The level and shape of the fee curve itself can be the subject of competitive bidding, and in fact would have to be if this model was to be used in a competitive pricing procedure. A possible advantage of a fee curve is in avoiding the administration costs arising from the separate advertising and award of a number of similar small projects. Although the fee curve is similar to the lump sum model in many ways, it has major weaknesses. It can be inefficient to use the same fee curve for a number of projects because the price yielded by the fee curve for a particular project may bear no relation to the actual cost involved in designing or supervising that work. It is more efficient to price each project individually, in which case one may just as well use a lump sum pricing model. A further disadvantage is that the supplier has an incentive to design a work which is more costly to construct because this will yield him a higher fee.

Negotiated price: Negotiated prices are a common approach in a number of international agencies. In the USA the "Brookes Law" makes price negotiation mandatory in the engagement of professional services consultants. Bids are evaluated solely on attributes other than price. When the highest quality bid has been identified the client enters into price negotiations with that firm. While this process has merit in enabling the highest quality results to be obtained, negotiation runs contrary to some of the criteria that the Transit New Zealand Act stipulates must be satisfied by the competitive pricing procedures, and hence cannot be considered as a suitable model for New Zealand.

Bid evaluation

If it were possible to measure the finished product of a contract at the tendering stage, selection of a preferred bidder would be as simple as choosing between different goods in a shop. Since it is not possible to measure the finished product of a contract at the time of commencement, it is necessary to identify, at the evaluation stage, indicators of the likely final outcome and measure bids against these indicators. Research found that most organisations which regularly used consultants to undertake work, used such indicators to evaluate the different bids. Most evaluation procedures used combinations of attributes including relevant prior experience, demonstrated track record, technical skills (personnel), appropriate resources (equipment), management skills, methodology and price. Combinations of some or all of these were considered applicable for road projects in New Zealand.

Having defined the relevant attributes, two alternative selection approaches are available. With the yes/no approach, attributes offered by each candidate are judged by the client to be either satisfactory or unsatisfactory. The lowest cost tender is then selected from bidders receiving "yes" (satisfactory) judgements on all attributes. The other approach which is useful when the client is interested in comparing all bids on a quality versus cost basis, is the weighted attribute system. This system provides a consistent framework by which the different attributes can be combined in a single overall index of attractiveness for each bid. Weighting percentages are assigned to each attribute reflecting the relative importance to be given to that attribute in the evaluation. Each bid is then graded against each attribute, the grades are multiplied by the weighting percentages and added together to give an overall index for the bid. The candidate with the highest index is the preferred bidder. The yes/no method is likely to be suitable for physical works projects where the client has decided the standard of output required. For professional services the weighted attribute system or a similar method that enables a range of quality versus cost options to be compared is likely to be more suitable.

Alternatives to the weighted attribute evaluation procedure were considered. These included pair-wise comparisons in which each bid is compared against every other bid in turn until a single bid was clearly preferred over all others. This avoids the occasional anomalous result that can be produced by the more mechanical grading and weighting system but may be more cumbersome and less easy to audit. Another procedure considered was to score bids on all attributes except price with a factor. Good scores would be slightly less than 1.0 and poor scores would be above 1.0. The price of each

bid is then multiplied by the factors awarded to that bid to give a price which is adjusted for quality. The bid with the lowest adjusted price is then selected. The advantage of this method is that it keeps more attention focussed on price but still allows quality to be a factor in the evaluation. While these methods have not been adopted they might still be trialled to determine whether they do provide any benefits over the weighted attribute method.

Discussions

Even when the preferred bidder has been identified, there may be some areas that require clarification, or it may be necessary to reach agreement on minor matters not covered in the tender. This should be the maximum extent of any pre-letting discussions with the preferred bidder. All major issues should be dealt with before completion of the evaluation stage. To revisit major matters of scope or price during final discussions with the chosen bidder would be anti-competitive and inefficient for client authorities. It is not in the long term interests of client authorities to try and negotiate prices down at these pre-letting discussions as this will probably lead to lower quality of output or higher quotes for subsequent projects. It is better to foster a fair and competitive market and let competition between suppliers produce the most efficient contract prices.

The tendering process for physical works projects

The following specific procedures have been adopted for physical works (maintenance and construction) projects:

Work Specification The specification is to be for an end result wherever possible. In the early stages of the new environment it will be necessary to continue providing details of acceptable methods to encourage bids from small contractors who will not have the resources and experience to make detailed submissions about their proposed methods. However the procedures make provision for alternative bids from more innovative contractors to be considered. In the medium term, as contractors become more comfortable with the concept of developing and proposing their own methods, and taking greater responsibility for quality management it will be possible to move further from method specifications to end result specifications.

Invitation to Bid The invitation to bid will be broadcast via newspaper advertisements. Each tendering authority is to specify from time to time the day of week on which it will advertise, the newspapers in which it will advertise and the section in these papers where its advertisements will be placed. This will ensure that all interested organisations are aware of contract opportunities. A two stage tendering process will not be used for physical works, except in rare cases for very large and complex projects. In most

situations all bidders will be required to submit full tenders from the outset. When designing the procedures a two stage tendering process was proposed initially to reduce the costs involved in preparation and evaluation of a large number of detailed bids. However following an analysis of the number of tenders received for state highway projects over the last two years, and consultation with local authority officials about the number of bids that they typically receive, it was determined that tendering authorities are seldom overwhelmed with bids, and that it would therefore not cause undue administration costs to invite full bids from the outset.

Price model: More than one activity and price model may be combined in a single contract. All construction and major maintenance projects, and routine maintenance should be priced as a lump sum. Maintenance activities that cannot be planned in advance such responding to flood emergencies, snow clearing or repairing minor pavement failures should use a schedule of rates.

Bid evaluation: Bids are to be assessed on the attributes listed earlier. A yes/no evaluation model is to be used for all except very large and complex projects which may use a weighted attribute system as described for professional services. The lowest priced bidder of those assessed as "yes" on all attributes is to be awarded the project. The research consultants designing the competitive pricing procedures originally proposed greater use of a weighted attribute model for most physical works projects and giving price only a 50% weighting. This was decided against following the consultation process which found few people with any real criticisms of lowest price tender as a suitable selection criteria, and considerable disquiet about the potential for tender awards to be subjected to appeal if any other process was adopted.

The tendering process for professional services projects

The following specific procedures have been adopted for professional services (planning, design and supervision) projects:

Work Specification: As in the case of physical works, this is to specify an end result as far as possible. This is likely to be easier for supervision and design projects than for investigation and research. In these latter cases it will be necessary to specify some elements of the method to be adopted as well.

Invitation to Bid: A range of procedures are specified for invitations to bid, depending on the size of the project. A register of consultants who are willing and competent to supply roading professional services is to be maintained. It is the consultant's responsibility to ensure that information on their areas of competence is current. Roading authorities are required to advertise the existence of their register at least once a year, inviting consultants to register.

For small projects, under \$50,000 in professional fees, the tendering authority is to select a short-list of 3 - 5 suitable candidates from the register and invite each of them to submit a full detailed bid.

On medium size projects for which the professional fees are in the range of \$50,000 to \$150,000, two alternatives may apply. If the register contains five or fewer competent suppliers each of them is invited to submit a full detailed bid. If there are more than five competent suppliers, each of them is invited to submit a Statement of Interest and Ability specifically directed at the project for which bids are being sought. Based on the statements, bidders are screened to a short-list of 3 - 5 who are invited to submit full detailed bids.

For large projects totalling over \$150,000 in fees, the project is to be advertised in the main newspapers inviting interested organisations to submit a Statement of Interest and Ability and the rest of the procedure is the same as for medium size projects.

The objective in these procedures is to strike a balance between the conflicting requirements in the Act to encourage competition and not exclude any competent organisation from competing, and to minimise the cost of tendering and administering contracts. On no occasion should more than five full detailed bids be sought. Preparation of detailed bids can cost consultants up to 5% or 10% of the value of some contracts. It is unreasonable and inefficient to request a large number of firms to incur this expense when only one firm is going to be awarded the contract. The cost of preparation of bids that are unsuccessful will eventually be passed on to roading authorities in later contracts by those firms.

Price Model: Projects which can be relatively precisely defined at the outset such as design and supervision are to adopt a lump sum pricing model. Investigation and planning projects, and research, which cannot be precisely defined at the outset are to be priced on a schedule of rates

Bid Evaluation: Bids are to be assessed on the attributes listed earlier. A yes/no evaluation model may be used for small projects. For medium and large size professional services contracts a weighted attribute evaluation model is to be used. The attributes to be assessed and the weightings to be applied should be advised in the invitation to bid so that candidates can focus their bid on the aspects that are most important to the client for the particular project concerned. A range of permitted weightings is specified for each attribute, in the procedures adopted, to allow some flexibility for different types of projects. For example supervision projects should give price a higher weighting, while investigation projects should give the quality attributes more emphasis.

The weightings adopted for the different attributes are:

	Standard	Range
Relevant prior experience	10	5 - 15
Demonstrated track record	10	10 - 20
Technical skills	25	20 - 40
Management skills	20	15 - 25
Methodology	15	10 - 30
Price	20	20 - 40

Each bid is graded on a scale of 0 - 4 against each of the stated attributes including price. Converting the qualitative attributes into a 0 - 4 grading will involve subjective judgement. The evaluator will need to be consistent across all tenders. Because experience with such bid evaluation procedures in New Zealand is not great, workshops will be conducted to develop the skills and judgement of evaluators and particularly to develop some consistency in the gradings that are awarded. Procedures have been provided to enable explicit gradings to be calculated for the price attribute.

General requirements and procedures applicable to all road projects

Contract duration limitations: With the exception of rare extremely large construction projects, no roading contract, either for professional services or for physical works, is to be for a duration of more than three years. Contract termination dates for adjacent areas are to be staggered so that future opportunities for contractors and consultants are available at relatively frequent intervals, and tender award workload for roading authority staff is evenly spread. This provision was the subject of considerable difference of opinion. Preferences ranged from durations of five years recommended by staff of some roading authorities, down to six - twelve months suggested by some contractors and consultants. Considerations pointing to shorter durations were the need to provide regular contract opportunities to retain the interest of unsuccessful bidders and the efficiency benefit to be gained from regularly subjecting contract costs to competitive pressure. Arguments raised in favour of longer durations were lower costs of less frequent bidding and bid evaluation, lower risk premiums in bids when there is a longer period of assured cashflow to repay investment in equipment, property and training, and benefits from a consultant or contractor becoming familiar with particular characteristics of the area. Overseas models did not point to any one duration being better than others. However shorter durations did appear to gain slightly greater favour for maintenance contracts and longer durations were favoured for the few cases where all professional services had been contracted.

Contract area limitations: The maximum contract area permitted is the local road network of an individual territorial authority. Adjacent territorial authorities may not combine their networks into a single contract package. As there are 74 territorial authorities in New Zealand this means that even if all of them package their maintenance or professional services activities in a single contract there will still be a minimum of 74 contract opportunities of each type available. However present indications are that many authorities will divide their activities into a number of separate contracts. It is considered that provided efficient contract administration procedures are put in place by tendering authorities, a range of different contract area sizes can be offered to provide opportunities for all willing suppliers.

Use of particular inputs: It can be anti-competitive and inefficient for the tendering authority to specify the use of particular inputs. Such provisions which can be used to unfairly advantage or disadvantage particular bidders or potential bidders are not permitted. For example a particular type of roading aggregate could be specified that is only available from one quarry in the district, and the quarry is owned by one of the likely bidders for the work

Bonds: Tendering authorities will not be permitted to require bonds for professional services contracts, and in physical works contracts bonds shall not be larger than the amount required to cover the reasonably expected loss of the client in the event of the contractor defaulting. Requiring unnecessary bonds can discriminate against small suppliers and therefore contravenes the requirements of the Act

Other contract conditions: A list of provisions which are required to be covered in contracts is presented including dispute resolution, conditions for termination, specification of contractor's liability and insurance requirements, ownership of information and intellectual property, etc

Special Provisions for State Highways

More specific provisions on contract area, scope and duration have been adopted in relation to the 11,000km of state highways over which Transit New Zealand has the direct responsibility for control and management. These resulted from the separate research project conducted in-house by Transit New Zealand staff. The provisions are not mandatory for local roads but territorial authorities are encouraged to study the reasons why Transit New Zealand adopted them before making decisions on their own contract packages.

Durations for maintenance contracts: Durations that have been adopted for state highway (physical works) maintenance packages are 1 - 2 years initially while the industry structure is changing rapidly and contractors are proving their capability, and also to enable problems that become apparent in contract specifications to be remedied without great cost. The range of durations will also enable future contract renewals to be evenly spread throughout the year. For some activities such as road-marking and landscape maintenance one year contracts may be more appropriate in the longer term as well, but for most activities the contract durations will eventually be extended out to 2 - 3 years. These will still be awarded as one year contracts, but with a right of renewal at the end of each year subject to satisfactory renegotiation on price. To be considered satisfactory such price adjustments will need to be less than or equal to the movement in a relevant price or cost index determined by Transit New Zealand.

Durations for professional services contracts: Individual contracts will be let for the professional services associated with investigation, design and supervision of construction projects and some heavy maintenance projects such as pavement rehabilitation overlays. In these cases the scope of the work involved will determine the contract duration. The professional service of managing routine maintenance and some periodic maintenance such as reseals is an on-going activity. The maximum duration of contracts for such work is to be 1 - 2 years initially, increasing to 2 - 3 years as Transit New Zealand and consultants gain experience of the new method of operation. It is envisaged that it will be possible to precisely specify the bulk of the work required under these contracts at the outset and award them on the basis of lump sum prices.

Scope of maintenance contracts: Maintenance activities in each area will not all be packaged together in one multi-disciplinary contract but will be divided into seven different contracts to enable specialised contractors to bid directly to Transit New Zealand for the particular activities that interest them. Research and consultation on this aspect discovered a wide range of views. Initial thinking was to include all activities in a single contract and let the successful bidder determine which activities to acquire skills for and which to sub-contract to specialist firms. This is how the majority of state highway maintenance has been done in the past, and was the approach favoured by most large contracting firms with whom consultations took place.

However further investigation led to the conclusion that there were greater benefits to be gained from contracting activities separately and that many roading authorities in other countries do so. This is expected to result in competitive bids from smaller contractors with low overheads who only have skills and equipment for a limited range of activities. The larger contract management workload that this places on the client can be reduced by requiring contractors to accept greater responsibility for quality management and by developing more streamlined facilities to assist with the contract administration task. Organisations with experience of letting work in large packages to main contractors who then subcontracted much of the work to smaller contractors said these sub-contractors were usually treated poorly by main contractors and the quality of work was lower.

Contracts will therefore be let for:

- Maintenance of pavement, shoulders and roadside drainage
- Maintenance of signs, edge marker posts and sight-rails
- Minor bridge maintenance, guard-rails, temporary pot-hole repairs and reflectorised raised pavement markers
- Roadside vegetation control and rest area maintenance
- Road line-marking
- Traffic signal maintenance
- Lighting maintenance

The pavement and maintenance contractor will also tender hourly rates which will be used when carrying out emergency maintenance and repairs, during floods for example. Other local contractors will also be invited to submit hourly rates for equipment and labour that could be mobilised quickly in the event of emergencies.

The signs maintenance and guard-rails/pot-holes contracts both require regular patrolling and quick response to ensure the safety of road users. Economies may be

gained by combining these contracts so they will be advertised simultaneously and contractors will be invited to submit bids for the two combined as well as separately.

Area of maintenance contracts: Contract areas for pavement and drainage maintenance range from 100 - 250 km of highway. These areas have been determined by considering the length that would provide a reasonable continuity of work throughout the year for a workforce comprising one or two 4 - 6 men work-gangs. Current pavement and drainage maintenance expenditure in the recommended contract areas is typically \$600,000 - \$1,500,000 per year. Continuity of work was by no means an overriding consideration because one of the most likely outcomes of the contracting of maintenance will be greater productivity as contractors are only paid for work that is needed and will seek work from other clients to utilise any spare capacity not required for the main contract. If contract sizes are too large this beneficial adjustment is less likely to be realised. The above contract sizes also mean that in many cases the geographic area of contracts coincide with territorial authority areas. It is considered that this will encourage some local authorities to form LATEs and compete for this work, who might not have if contract areas had been larger. The advertising of the state highway and local road maintenance contracts in an area might be synchronised in a few cases to test whether contractors will submit lower prices if they are awarded both contracts.

Contract areas for other maintenance activities will generally be the same as for the pavement and drainage contract although in some cases such as roadside vegetation control and maintenance of rest areas smaller areas are likely to be more efficient, while in others for specialist activities such as road-marking and traffic signal maintenance larger areas are being considered.

Geographical coverage of professional services contracts: Maintenance management contract areas have been defined which cover 300 - 600 km of state highway centred on main cities or towns, where consulting engineering firms are likely to operate. Unlike denser local road networks the state highway system consists of relatively few widely spaced long lengths of road. If too much length of highway is included in a contract the geographical extent becomes too much to manage efficiently from a single location. Some of the factors involved in deciding on these areas were the need to provide a reasonable number of contract opportunities for consultants in order to maintain the interest of unsuccessful bidders and the desire to limit the number of consultants that individual Transit New Zealand regional managers have to deal with to simplify the contract administration workload.

Competitive pricing procedures for public passenger transport projects

Introduction

Under the new environment established by the 1989 transport law reform legislation virtually all public passenger transport services will have to be provided through a competitive process after 30 June 1991. Regional councils will plan the services that they believe are required for the region. There will be a period during which operators can register to provide services on a commercial (unsubsidised) basis. Following this period the council will invite tenders from operators willing to provide services on a subsidised basis for those routes and times of day which have received no commercial registrations. In this way all subsidy payments will go to firms who can provide services the most efficiently and none will be directed to particular licensed operators as-of-right as occurs at present.

Regional councils and territorial authorities will not be able to receive subsidy payments but territorial authorities may own up to 100% of the equity of companies that can provide services and tender for subsidy. This means that authorities who own vehicle fleets at present have to dispose of them, either to private sector operators or to a stand-alone local authority trading enterprise company which they have established. New Zealand's passenger transport deregulation applies to a greater number of modes than was the case in the UK. On some routes competing tenders may be received from operators of buses, harbour ferries and railways. A tendering and bid evaluation procedure is required that gives appropriate weightings to the different benefits offered by each of these modes.

Criteria were determined for assessing the different competitive pricing procedure features, based on the Transit New Zealand Act, the objectives of Transit New Zealand and other theoretical and practical considerations. These included a number of criteria related to efficiency of service provision such as maintenance of a dynamic market, ease of entry, preventing exercise of market power by some participants, simplicity of competitive process and minimisation of administration costs. To assess the suitability of features for assisting the objective of effectiveness of services for users, criteria such as encouragement of service innovation and mobility for transport disadvantaged were used. Criteria relating to other objectives were maximisation of safety of the public, reduction of road congestion and environmental benefits.

For each feature "do nothing" was to be the preferred option unless one of the assessment criteria showed that it was essential to specify a requirement. The effect of this is that the competitive pricing procedures specified by Transit New Zealand are the bare minimum necessary to meet its statutory requirements and to ensure achievement of its objectives. As much of the detail of the procedures as possible has been left to Regional Councils to specify. In some cases guide-lines were provided for Regional Councils where a certain procedure seemed desirable but not essential.

Requirements relating to the tendering process

Competitive tendering requirement: Except for small contracts, all subsidised public passenger transport services that are required by law to be awarded by a competitive pricing procedure are to be competitively tendered. This means for instance, that contracts cannot be entered into by negotiation with a particular favoured operator.

Form of service specification: The tender document is to contain a primary service specification defining the required service in terms of aspects such as route, termini, frequencies, capacities and fares, and specifying which of these are mandatory. The documents are also to specify any other non-mandatory service features that should be considered and will be relevant in the tender evaluation process. All tenderers are required to submit on the primary service specification, meeting its mandatory requirements, but they may also submit proposals for alternative services which serve similar functions and tendering authorities must give such alternative proposals fair consideration. This is designed to enable small operators to submit straight-forward tenders at minimal risk, thereby encouraging competition, but also to provide the opportunity for more confident operators to submit innovative proposals that could provide more attractive services, perhaps at higher cost.

Invitation to bid: Invitations to bid for contracts are to be published in appropriate local and national newspapers following a pre-specified procedure as for road projects. These advertisements are to be published at least two weeks in advance of the pre-tender meeting that tendering authorities required to conduct. Every contract is to be covered in at least one pre-tender meeting. These meetings are considered necessary in the case of public passenger transport service contracts to enable tenderers to gauge just how far from the primary specification they can depart with alternative tenders and to determine what emphasis is to be placed on the various service features in the bids when evaluating tenders. It is not mandatory for tenderers to have attended a pre-tender meeting in order for their bid to be considered. Tendering authorities are required to have a formal procedure for correction of errors and advising of changes to the specification, that is fair to all operators who have responded to the advertised invitation to bid.

Price model: Tenders are to be submitted as a lump sum. Transit New Zealand does not direct tendering authorities whether to award contracts on the basis of gross tenders (in which revenue is returned to the tendering authority), or net tenders (in which the revenue is retained by the operator). Both pricing methods have advantages and disadvantages. Competition in the early years will probably be greater if contracts are awarded on the basis of gross tenders as this carries less risk for operators. However as operators become used to the deregulated environment they will probably become keener on net tenders which give them the opportunity of increasing revenues and profits by providing an improved service that attracts greater ridership.

Tendering authorities are to specify whether gross or net tenders are required and all tenderers must submit on this revenue type. When net tenders are specified the tendering authority is to provide all passenger count and estimated revenue information for the

previous year in the information for tenderers, however no guarantee is given about the future likely revenue. This is up to the bidder to estimate and allow for

Bid evaluation: The evaluation is done in two steps. Firstly tenders are assessed for conformance with the primary service specification. Only bids that conform to all the mandatory evaluation factors are considered further. The second stage of tender evaluation involves a trade-off methodology in which primary specification prices of eligible tenders are compared to optional evaluation factors of other tenders determined to be eligible in the first stage. However the lowest-priced primary specification tender should be selected unless the selection of another tender is clearly preferred in the public interest. This could arise if the demonstrable public benefit from the optional evaluation factors exceeds the extra cost of the selected higher-priced tender, or if the difference in price between the selected lower-priced alternative tender and the lowest-priced primary specification tender exceeds the demonstrable loss in public benefit associated with the lower-priced tender. Reasons for selecting other than the lowest-priced primary specification tender are required to be well documented and available for audit.

A detailed procedure is also set out for making comparisons between bids from operators of different modes. For example cross-harbour passenger ferries and commuter rail services can provide external benefits such as lower pollution and lower road congestion than road based modes. This is taken account of when evaluating the competing bids.

Expedited procedure for small contracts: A simplified procedure is provided for awarding small contracts. These are defined as contracts comprising up to 5,000 vehicle kilometres of travel for a 40 - 50 seat bus, or equivalent. The procedure is firstly to publish an invitation to bid according to the the pre-specified newspaper advertising procedure. The advertisement is to require interested operators to specify their price and any other summary information required in a letter to the tendering authority. The authority can then negotiate with those operators who submitted letters until satisfactory agreement has been reached with one or more of them.

Specific contract requirements

Contract Duration Limitations: The minimum contract duration is to be one year except in the case of special seasonal services or in emergency situations where an existing provider of a service has withdrawn. The maximum contract duration for bus services is three years, but contracts may be renewed, once only, for up to two additional years. Renewal is not permitted where the incumbent contractor holds any interest in more than 25 percent of contracted services in the region. Initial contracts are to be spread between durations of one year and three years to establish a future rolling programme of new contracts. The maximum contract duration for services where rail or ferry modes may compete has not been finalised.

Contract size limitations: The maximum size of any single contract is to be ten peak vehicles (with 40 - 50 seats or equivalent). In smaller regions with few contracted services a lower maximum contract size will apply. Tendering authorities may invite combined tender submissions covering more than one individual contract subject to an upper limit of three contracts, a requirement for the contracts to be in geographic proximity to one another and a requirement that operators wishing to tender on the combination must also tender on each individual contract within the combination.

The contract duration and size provisions have been determined after consideration of the number and size of existing operators that might bid for contracts. In future it might be possible to amalgamate contracts into larger packages over longer terms but initially, when there is only one substantial operator in each area and a number of relatively small ones, it is necessary to bear slightly higher administration costs in order to encourage effective competition.

Market share: No limit is to be imposed on any operator's market share. The contract duration and size limitations make it feasible for contracts to be contested by small operators and new entrants to the industry. Low barriers to entry mean that there is no need to break up the existing dominant operators or place limits on the number of contracts that they may hold concurrently.

Future price adjustments: Negotiation for price increases is prohibited during the contract term. However adjustments to contract prices will be allowed at specified intervals. Upward contract price adjustments shall not exceed the movement in a composite index based on industry-specific and economy wide price movements which will be promulgated at appropriate intervals by Transit New Zealand.

Variations in contracted service: Tendering Authorities may vary the scope of service in a range of plus or minus 25% from the basis of the tender award. This provision opens up potential for abuse of the competitive procedures but the flexibility it provides is nonetheless considered necessary to enable adjustments to be made to services in response to changes in customer demand during the term of individual contracts.

Other contract requirements: Other conditions are specified covering such matters as provisions for safety, prohibition of collusion, gratuities, conflicts of interest and specification of labour arrangements by tendering authorities, co-operation of operators during handover to new operators at the conclusion of contracts and provisions for termination of contracts in the event of failure of service to meet pre-defined patronage levels, cuts in funding from government or other reasonable cause. Tendering authorities may specify maximum vehicle age restrictions provided these are not less than the economic life of the vehicles. There are also provisions preventing authorities from specifying modes or vehicle sizes or imposing vehicle specifications that are likely to limit competition or favour one category of operator over others.

Looking to the future

The competitive pricing procedure manual is now being released for trialling and comment. It comprises separate volumes for road projects and public passenger transport projects. Training courses will be conducted over the next few months to introduce the manuals and give detailed instruction and practice in particular aspects such as bid evaluation and preparation of work specifications. Early in 1991 the manual will be revised in the light of comments received and experience gained from the trials.

It will not be possible to judge the success or otherwise of the competitive pricing procedures until they have been in operation for a time. There are likely to be some unfortunate experiences where individual contractors do not perform as well as required, and other situations where total costs will turn out higher than would have been the case under the old system. The land transport industry will need to be carefully monitored so that such problems are identified as quickly as possible and that, where necessary, changes can be made to the procedures.

On the other hand there will be many situations where competitively tendered contracts will yield substantial savings compared with current expenditure levels, or where improved levels of service will be provided for the same expenditure as before. It is expected that the land transport industry will change significantly over the next two to three years as it adjusts to new legislative requirements and the particular competitive pricing procedures that have been defined. Transit New Zealand will periodically revise the procedures in the light of these changes in order to maintain an appropriate balance between efficiency, competition and administration costs.

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